Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Imperial Ponds Conservation Area

2015 Annual Report

July 2018

Work conducted under LCR MSCP Work Task E14

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
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City of Bullhead City
City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
Salt River Project Agricultural Improvement and Power District
Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
Yuma County Water Users' Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Wildlife
City of Needles
Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
Southern California Public Power Authority
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Nevada Participant Group

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Nevada Department of Wildlife
Southern Nevada Water Authority
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Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy

Lower Colorado River Multi-Species Conservation Program

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ACRONYMS AND ABBREVIATIONS

DO	dissolved oxygen
FY	fiscal year
Imperial NWR	Imperial National Wildlife Refuge
IPCA	Imperial Ponds Conservation Area
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
mg/L	milligrams per liter
mm	millimeter(s)
pH	the acidity or basicity (alkalinity) of an aqueous solution
PIT	passive integrated transponder
Reclamation	Bureau of Reclamation
USFWS	United States Fish and Wildlife Service

Symbols

°C	degrees Celsius
>	greater than
<	less than
µS/cm	microsiemens per centimeter
%	percent

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1.0 INTRODUCTION

The purpose of this annual report is to summarize activities that have occurred at the Imperial Ponds Conservation Areas (IPCA) from October 1, 2014, through September 30, 2015, which is Federal fiscal year (FY) 2014. Water usage is presented as a calendar year, January 1 through December 31, 2015, consistent with water accounting reporting.

1.1 Background

The IPCA consists of 126 acres of land located on the U.S. Fish and Wildlife Service's (USFWS) Imperial National Wildlife Refuge (Imperial NWR). In 2000, the USFWS, the Bureau of Reclamation (Reclamation), and Ducks Unlimited began constructing the DU2 Ponds as part of the 1997 Biological Opinion. The site consisted of 96 acres that included four backwater ponds and native riparian forest. Problems developed with both the backwater and riparian habitat. The backwater ponds were shallow and could not be isolated from one another without compromising water quality. One backwater pond successfully maintained native fishes; however, fishes could not be maintained in the remaining three backwater ponds. The riparian plantings of Fremont cottonwood-willow (*Populus fremontii-Salix* spp.) (hereafter cottonwood-willow) were unsuccessful as a result of high soil salinities.

Reclamation partnered with the USFWS to fulfill a portion of the Lower Colorado River Multi-Species Conservation Program's (LCR MSCP) habitat creation/ restoration goals. A Land Use Agreement has been entered into between Reclamation and the USFWS that identifies 126 acres of program lands that comprise the IPCA and secures water on the Imperial NWR.

2.0 CONSERVATION AREA INFORMATION

2.1 Purpose

The IPCA was developed for both native fishes and terrestrial wildlife species. Currently, the IPCA consists of six disconnected backwaters totaling 80 acres created as backwater habitat for razorback suckers (*Xyrauchen texanus*) and bonytail (*Gila elegans*). There are 12 acres of managed marsh for California black rails (*Laterallus jamaicensis coturniculus*), Yuma clapper rails (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*]), and western least bitterns (*Ixobrychus exilis hesperis*). Thirty-four acres will be developed as riparian habitat for southwestern willow flycatchers

(*Empidonax traillii extimus*), yellow-billed cuckoos (*Coccyzus americanus occidentalis*), and other LCR MSCP species as identified in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004).

2.2 Location

The IPCA is located within Reach 5 of the LCR MSCP program area. It consists of 126 acres of land on the Imperial NWR located in Arizona at River Mile 59 (figure 1).

2.3 Landownership

The property is located on the Imperial NWR, which is owned and managed by the USFWS.

2.4 Water

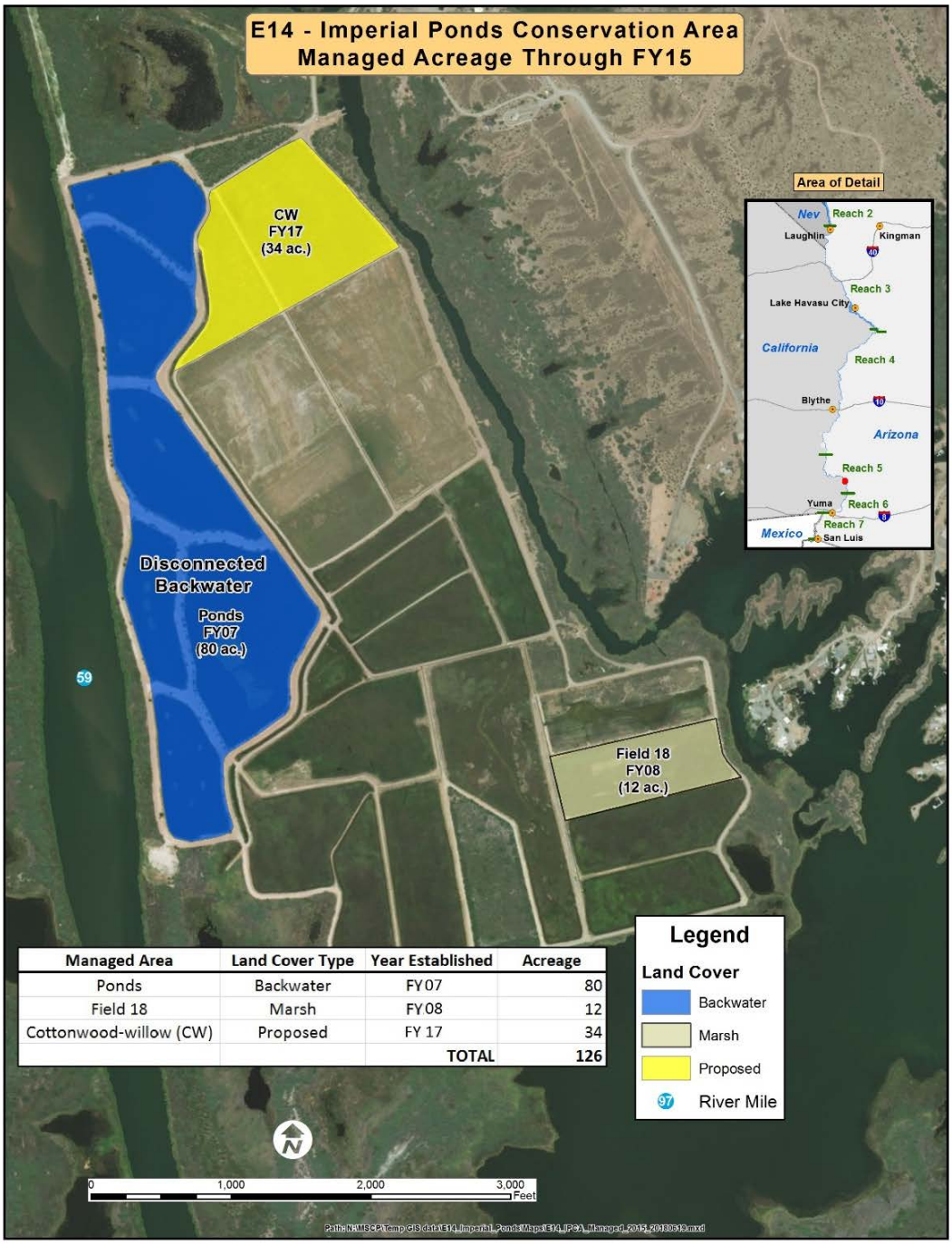
The IPCA receives water from the Imperial NWR's entitlement granted by the 1964 Supreme Court Decree in *Arizona v. California* and by U.S. Department of the Interior Secretarial reservation. The Imperial NWR has an entitlement of 28,000 acre-feet of water diverted from the main stream, or 23,000 acre-feet of consumptive use of main stream water, whichever is less, with a priority date of February 14, 1941. The water used for the ponds and irrigation is supplied from a portion of this water.

2.5 Agreements

A Land Use Agreement was signed in 2006 by Reclamation and the USFWS to secure land and water for the IPCA for the remainder of the 50-year LCR MSCP. The agreement outlines the rights and responsibilities of each partner in the project's development and maintenance.

2.6 Public Use

The IPCA is in an area that was closed to the public by the USFWS prior to becoming a conservation area; it remains closed to the public.



Managed Area	Land Cover Type	Year Established	Acreage
Ponds	Backwater	FY07	80
Field 18	Marsh	FY08	12
Cottonwood-willow (CW)	Proposed	FY 17	34
		TOTAL	126

Figure 1.—IPCA managed acreage through FY15.

2.7 Law Enforcement

Law enforcement activities are performed primarily by the USFWS's Law Enforcement Officer, under the LCR MSCP's site-specific Fire Management & Law Enforcement Strategy (LCR MSCP 2010). Additional local law enforcement

assistance is available through the Arizona Game and Fish Department's Yuma Office, the Yuma County Sheriff's Office, and the Bureau of Land Management's Yuma Office.

2.8 Wildfire Management

The USFWS will provide an appropriate management response on all wildfires that occur within the IPCA. The full range of suppression strategies is available to managers provided that selected options do not compromise firefighter or public safety, are cost effective, consider the benefits of suppression and the values to be protected, and are consistent with resource objectives (LCR MSCP 2010).

3.0 HABITAT DEVELOPMENT AND MANAGEMENT

3.1 Planting

No planting occurred at the IPCA during 2015. Cottonwood-willow planting will not occur before FY18.

3.2 Irrigation/Water Delivery

Irrigation to Fields 1, 2 and 18 began in mid-February 2015 and continued through September 2015. Water delivery to the ponds stopped in January 2015 and resumed in October 2015 (table 1).

Table 1.—Imperial NWR water usage summary, January 1 – December 31, 2015

Location	Water usage (acre-feet)
Pond 1	14.68
Pond 2	24.82
Pond 3	21.47
Pond 4	30.99
Pond 5	90.50
Pond 6	38.42
Field 1	104.68
Field 2	43.64
Field 18	285

3.3 Site Maintenance

The Imperial NWR controlled establishment of common reed (*Phragmites australis*) in Fields 1 and 2 and along the pond banks and the hummock. They also maintained the canal system, shutting down irrigation from October through February to clean and repair the canal.

Reclamation's Yuma Area Office completed electrical upgrades to automate operation of the pumps.

3.4 Management of Created Land Cover and Habitat

3.4.1 Pond Management

The screened surface water supply may be a possible vector for invasion of non-native fishes (Normandeau Associates, Inc. 2010). The screen is now disconnected and the water supply is 100% well water. Well water should be free of all life stages of non-native fishes, thereby eliminating a key vector for invasion and establishment of non-native species. Although 100% non-native-free backwaters are likely not possible for extended periods, a rigorous effort was made to complete renovation on all the ponds before additional stocking efforts are initiated.

Vegetation establishment on the shorelines, hummocks, and large marsh area in Pond 5 were areas of potential concealment for fishes. Vegetation removal from the shorelines and hummocks reduced areas of refuge for fishes in all ponds.

Removal of the marsh in Pond 5 was a more intensive process that included water removal and burn plans. In October 2014, pumping lowered the water elevation of Pond 5 to about 180 feet above mean sea level. The low water levels exposed most of the marsh prior to the burn. However, these efforts did not result in the complete removal of the marsh area but did allow multiple areas of access for chemical distribution.

Rotenone was applied as a two-part treatment (i.e., one treatment = two chemical applications) (Robinson et al. 2009). The first application was in December 2014, the second application is scheduled for January 2015.

3.4.2 Soil Management

Irrigation of Fields 1 and 2 continue in an effort to reduce soil salinity until planting.

4.0 MONITORING

Many of the monitoring activities are part of larger monitoring projects for the LCR MSCP. Additional details and information may be available in the technical reports available on the LCR MSCP Web site (www.lcrmscp.gov) or upon request.

4.1 Backwater Monitoring

4.1.1 Native Fishes

Efforts to remove native fishes from Pond 1 ended in December 2015. Removal efforts totaled 280,919 minutes using a combination of hoop, trammel, and Oneida nets and electrofishing. Passive integrated transponder (PIT) tag scanners were also deployed from May to September 2014 to generate population estimates for razorback suckers and bonytail prior to the application of rotenone in Pond 1. No population estimate could be generated for bonytail because of limited recapture data (< 3 bonytail captured); however, three bonytail with PIT tags were detected by the scanners. A population estimate of 77 individuals (95% confidence interval of 55–115) was generated for razorback suckers.

A total of 145 bonytail (mean total length 233 millimeters [mm], 85–410 mm) were captured and transported to the Lake Mead Fish Hatchery. No captured bonytail were recaptures. Eighty-six razorback suckers (mean total length 508 mm, 260–640 mm) were captured and transported to the A10 backwater. Forty-six were recaptured fish, 38 had no tag, and 2 had no length, weight, or tag data recorded. During or following the renovation, 82 dead razorback suckers and 218 dead bonytail surfaced on Pond 1. PIT tag data were collected from 42 of the razorback suckers.

4.1.2 Water Quality

Physico-chemical water quality parameters, including temperature, dissolved oxygen (DO), specific conductivity, and pH, all have the potential to affect the survival of native fishes as well as their ability to complete their life cycle. Water quality in the Imperial ponds was monitored using multi-parameter water quality instruments that recorded temperature in degrees Celsius (°C), DO in milligrams per liter (mg/L), specific conductivity in microsiemens per centimeter (µS/cm), and pH twice each day. Water quality parameters within the ponds occasionally deviated from the threshold values suggested by Kesner et al. (2008) for native fishes: temperature < 33.3 °C, DO > 4.0 mg/L, and pH < 9.0; however, no negative impacts to native fishes were documented during these periods. No specific threshold value was set for specific conductivity.

Water quality parameters were similar among the irrigated pond, Pond 1, and those not receiving irrigation, Ponds 2–6, with the exception of specific conductivity. Temperature ranged from 16.7 to 32.4 °C, DO from 0.0 to 17.9 mg/L, pH from 7.9 to 9.7, and specific conductivity from 2,158 to 9,300 µS/cm; the irrigated pond did not exceed 3,858 µS/cm (figures 2–5). Water quality data were not recorded in November, December, January, April, or May due to ongoing pond renovation activities.

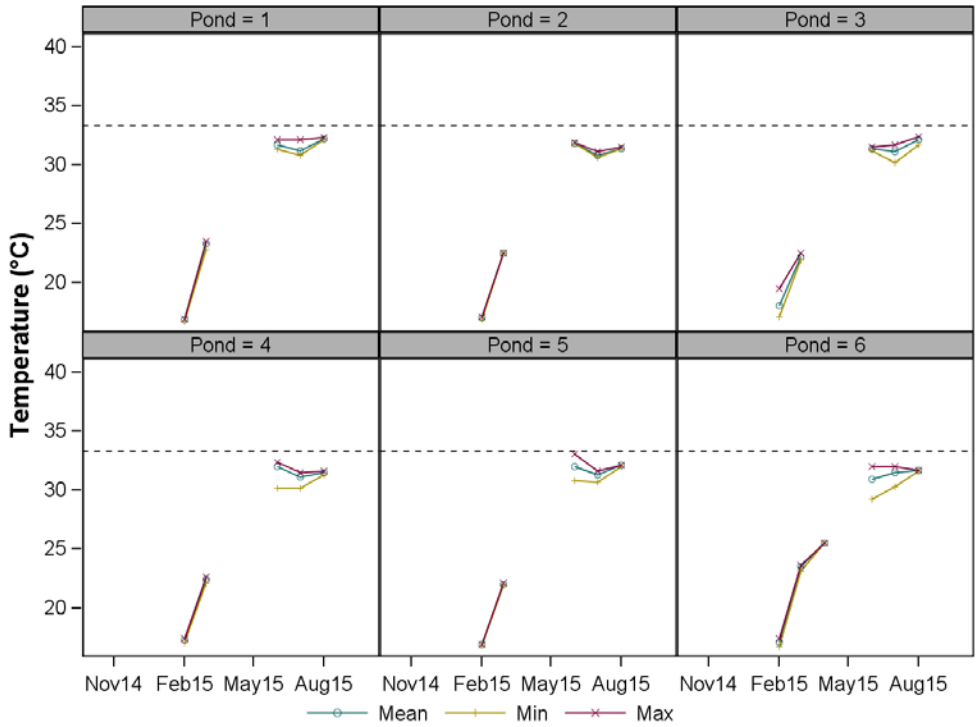


Figure 2.—Mean, minimum (Min), and maximum (Max) temperature.
The dashed line represents the suggested temperature threshold value of 33.3 °C.

4.2 Avian Monitoring

4.2.1 Marsh Bird Surveys

Presence surveys for California black rails, western least bitterns, Virginia rails (*Rallus limicola*), and Yuma clapper rails were conducted in marsh habitat at the IPCA in three survey sessions during March and April. Two LCR MSCP marsh bird species were detected in Field 18: western least bitterns and Yuma clapper rails. Four Yuma clapper rails were detected during the first survey session (March 18). There was one detection of western least bitterns and two detections of Yuma clapper rails during the second survey session (April 8). There were two detections of Yuma clappers rail during the third survey session (April 28) (Ronning and Kahl 2017).

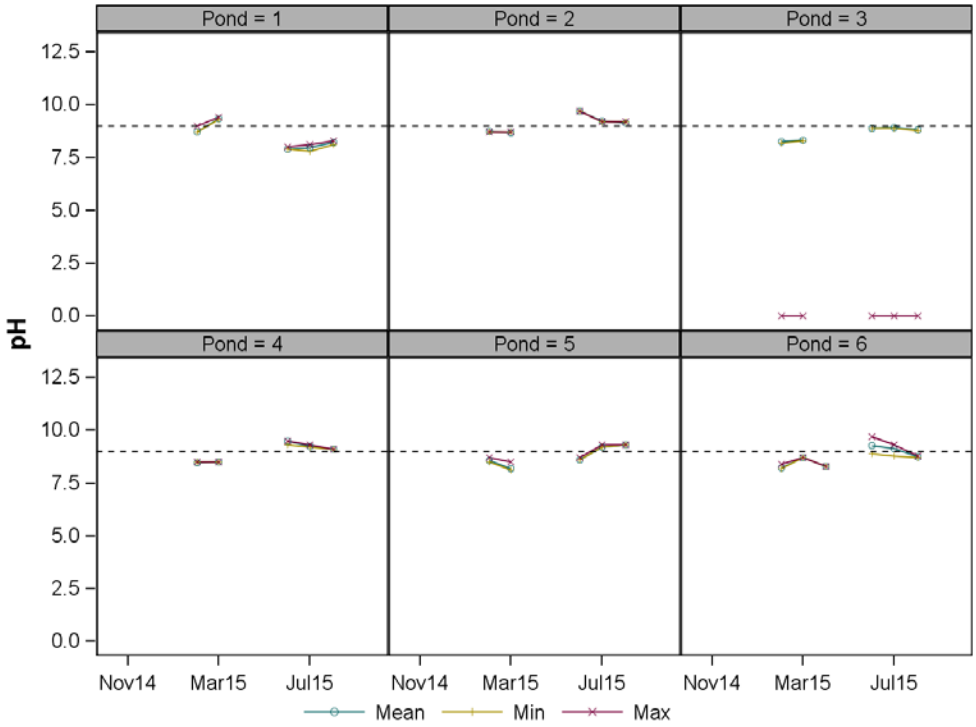


Figure 3.—Mean, minimum (Min), and maximum (Max) pH.
The dashed line represents the suggested pH threshold value of 9.0.

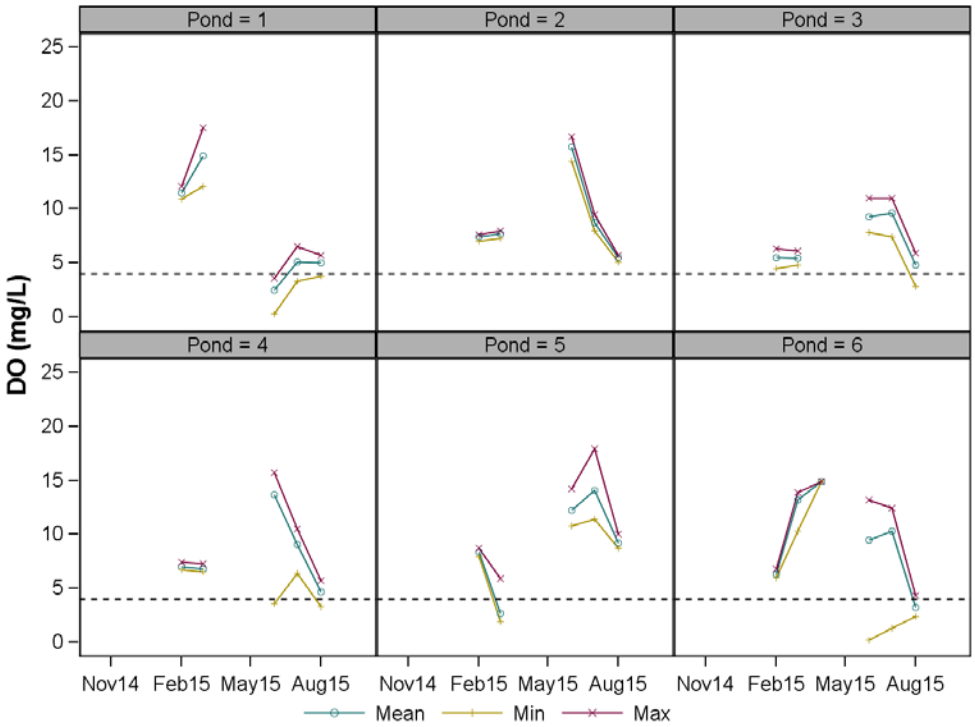


Figure 4.—Mean, minimum (Min), and maximum (Max) DO.
The dotted line represents the suggested DO threshold value of 4.0 mg/L.

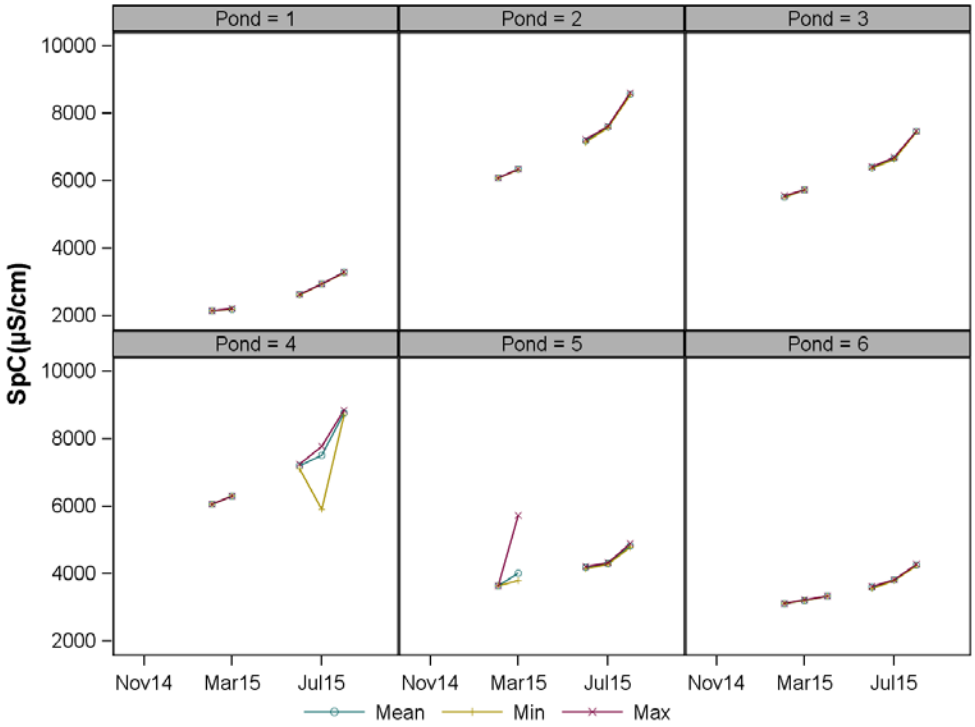


Figure 5.—Mean, minimum (Min), and maximum (Max) specific conductivity (SpC).

5.0 HABITAT CREATION AND CONSERVATION MEASURE ACCOMPLISHMENT

5.1 Vegetation Monitoring

Vegetation data were collected in FY15 using light detection and ranging (lidar). Lidar measures the vegetation structure and provides the ability to identify structural diversity and successional growth stages. Conservation area vegetation will be evaluated on a periodic basis using lidar to ensure the habitat is meeting species' requirements. A procedure to analyze and provide vegetation structure metrics will be developed, and the results will be presented in future reports.

Preliminary analyses suggest that airborne lidar may not provide the necessary detail for evaluating marsh habitat. Alternative techniques will be explored.

5.2 Evaluation of Conservation Area Habitat

The Final Habitat Creation Conservation Measure Accomplishment Tracking Process was finalized in October 2011 (LCR MSCP 2011). All areas within the IPCA were designed to benefit covered species at the landscape level.

The fish ponds will continue to be maintained consistent with the protocols employed during the water management study until a water delivery and management plan is developed. The water depths at Field 18 are managed during the breeding season for Yuma clapper rails, California black rails, and western least bitterns. Table 2 shows how much habitat is creditable for each of the targeted covered species at the IPCA. Three species with habitat creation goals have creditable acres at the IPCA. These species, including their corresponding conservation measure acronyms, are: Yuma clapper rail (CLRA1), California black rail (BLRA1), and western least bittern (LEBI1).

Table 2.—Species-specific habitat creation conservation measure creditable total acres for 2015

Species-specific habitat creation conservation measure	BONY2	RASU2	CLRA1	BLRA1	LEBI1
Creditable acres in 2015	0[1]	0[1]	0	0	0
Total, including previous years	**0**	**0**	**12**	**12**	**12**

[1] Reclamation and the USFWS have completed a 5-year management strategy, which calls for stocking native fishes in FY17. Acres will be considered creditable at that time.

6.0 ADAPTIVE MANAGEMENT RECOMMENDATIONS

Adaptive management relies on the initial receipt of new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (LCR MSCP 2007). Under the Adaptive Management Program, habitat creation sites will be assessed for biological effectiveness and whether they fulfill the conservation measures outlined in the HCP for 26 covered species and if they potentially benefit 5 evaluation species. Post-development monitoring and species research results will be used to adaptively manage habitat creation sites after initial implementation. Once monitoring data are collected over a few years, and then analyzed IPCA, recommendations may be made through the adaptive management process for site improvements in the future.

There are no adaptive management recommendations for IPCA at this time.

LITERATURE CITED

Kesner, B.K., M. Fell, G. Ley, P. Marsh. 2008. Imperial Ponds Native Fish Research Final Project Report, October 2007 – June 2008. Prepared for the Lower Colorado River Multi-Species Conservation Program, Boulder City, Nevada.

Lower Colorado River Multi-Species Conservation Program. 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan, Final. December 17 (J&S 00450.00). Sacramento, California.

_____. 2007. Final Science Strategy. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

_____. 2010. Lower Colorado River Multi-Species Conservation Program Fire Management & Law Enforcement Strategy. Bureau of Reclamation, Boulder City, Nevada.

_____. 2011. Final Habitat Creation Conservation Measure Accomplishment Tracking Process. Prepared by the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada. October 26.

Normandeau Associates, Inc. 2010. Evaluation of the Cylindrical Wedge-Wire Screen System at the Imperial National Wildlife Refuge, Arizona 2009. Prepared for the Lower Colorado River Multi-Species Conservation Program by Normandeau Associates, Inc., Stevenson, Washington.

Robinson, A.T., C. Carter, D. Ward, and H. Blasius. 2009. Bonita Creek Native Fish Restoration: Native Aquatic Species Salvage, Chemical Renovation, and Repatriation of Native Aquatic Species. Arizona Game and Fish Department, Phoenix, Arizona.

Ronning, C.J. and J. Kahl. 2017. Marsh Bird Surveys at Conservation Areas, 2014–2016 Annual Report. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.